

1 CLAIMS

2 What is claimed is:

3
4 1. A method for safely handling unstable hydride gases comprising:
5 providing an enclosure with one or more openings;
6 providing a partitioning means to divide the said enclosure into smaller volumes;
7 providing one or more connecting passageways between each smaller volume
8 and to an opening to the enclosure;
9 providing a means to store heat within the said enclosure;
10 providing a heat transfer means from every smaller volume to the means to
11 store heat; and
12 providing a means for sizing the partitions, the means to store heat and the heat
13 transfer means so as to prevent the temperature of the gas or gases in any of the
14 smaller spaces from reaching the minimum temperature needed to cause ignition or
15 decomposition of the gas or gases in an adjoining space.

16
17 2. A method as claimed in claim 1 wherein said partitioning means
18 comprises part or all of the means to store heat.

19
20 3. A method as claimed in claim 1 wherein said partitioning means
21 comprises part or all of the heat transfer means.

22
23 4. A method as claimed in claim 1 wherein said partitioning means can be
24 inserted through an opening that has a smaller diameter than the enclosure.
25

1 5. A method as claimed in claim 1 wherein providing said means to store
2 heat can comprise raising the temperature of a heat storage medium, melting or
3 vaporizing a heat storage medium, initiating a heat absorbing chemical reaction of a
4 heat storage material or any combination thereof.

5
6 6. A method as claimed in claim 1 wherein said minimum temperature is the
7 thermal decomposition temperature of hydride gases which can release heat by
8 decomposing without oxidation which include acetylene, propadiene, methylacetylene,
9 butadiene, ethylene, hydrazine, silane, disilane, trisilane, germane, digermane,
10 trigermane, arsine, stibine, bismuthine, plumbane, hydrogen selenide and hydrogen
11 telluride.

12
13 7A method as claimed in claim 1 wherein said partitioning means comprises
14 commercially available column packing, cut tubing pieces, metal turnings, hollow
15 or solid balls, mesh, fabric, granular material, open cell foams or sintered metal.

16 8. A method as claimed in claim 1 where the temperature required to prevent
17 ignition is between 25°C and 600°C

18 9. A method as claimed in claim 1 where the size of the sub volume created
19 by the partitioning means is between 1×10^{-18} and 1×10^{-3} cubic meters

20 10. A method for suppressing explosions as claimed in claim 1
21 wherein said partitioning means is coated with a further material.

22 11. A method as claimed in claim 1 wherein said partitioning means is
23 coated with a material which decomposes at a temperature between
24 room temperature and the said minimum temperature and provides a
25

1 chemical which can be detected to indicate that the temperature of the
2 enclosure has been elevated.

- 3 12. A method as claimed in claim1 where a some or all of the partitioning
4 means consists of one or materials which absorb heat when they react.
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25